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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V



DATE: May 12, 1986
SUBJECT: National Lead/Illinois EPA/U.S. EPA QAPP Conference Call Summary
FROM: Brad Bradley BB
IL/IN Unit
TO: National Lead/Taracorp-Granite City, Illinois File
Thru: Russell Diefenbach, Chief
IL/IN Unit

Date of Conference Call: April 9, 1986 at 1:00 p.m.

Personnel Participating

Bill Weddendorf - National Lead
Frank Hale - O'Brien & Gere
Dave Hill - O'Brien & Gere
Doug Crawford - O'Brien & Gere
Bina Shah - Illinois EPA
Brad Bradley - U.S. EPA
Dave Payne - U.S. EPA

Purpose

The purpose of the conference call was to resolve U.S. EPA concerns regarding the QAPP portion of the Draft RI/FS Workshop/QAPP/Sampling Plan/ Safety Plan prepared for National Lead by O'Brien & Gere.

Summary

Dave Payne generated a list of specific concerns with the QAPP which was used as the agenda for the meeting; this list is included as the attachment to this memo. Dave Payne led the discussions, and each item of the list was satisfactorily addressed during the call.

U.S. EPA then stated that, regarding the Sampling Plan, three to five well volumes must be removed prior to taking groundwater samples. National Lead agreed to make the necessary changes to the Sampling Plan.

A deadline of May 9, 1986 was established for the submittal of final copies of the RI/FS Workplan/QAPP/Sampling Plan/Safety Plan. It was agreed that any changes desired by Illinois EPA and/or U.S. EPA will be submitted as addenda to the final copies.

Recommended Follow-up Actions

It is important that some written record of the exact modifications that National Lead agreed to make to the QAPP be included in the file; otherwise, it will not be possible to ensure that the final QAPP reflects the changes negotiated during the conference call.

10 pages

Attachment -

3/1-8 (by express mail) on 3/31/86

From: David Payne, Chemist
Quality Assurance Office

To: Norman Niedergang, Chief
CELCLA Enforcement Section

Att: Brad Bradley

Subject: Quality Assurance Project Plan (QAPP) National Lead Survey,
Granite City, Illinois

I am writing this memo, pursuant to our meeting (Brad Bradley and I met with William Waddendorf of ~~National Lead~~ NL Industries) in February 1986.

I am writing this memo, pursuant to our meeting with ~~William Waddendorf~~ William Waddendorf of NL Industries during February 1986. I was requested to specify what I ~~intended to~~ ^{requested} in a Quality Assurance Project Plan from NL Industries and their engineering firm of C'Brien and Gere. Mr. Waddendorf requested that any changes ^{requested by the} made by simple amendment to the QAPP; however, this memo will request that the NL Site ~~be~~ QAPP be rewritten with major changes.

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I. Project Description

The Project Description should ~~include a list of~~ itemize and list the matrices to be tested (waste sludge and other associated wastes on-site, drums, groundwater, surface soils, surface run-off from the site, sediments from the surface run-off, etc.) as agreed-upon at the February 1986 meeting. ~~The~~ The number of samples of each matrix and their frequency of ~~analysis~~ ^{collection} (three for groundwater) should be specified. For each matrix, the parameters ~~of analysis~~ to be tested should be specified. I believe these are the 8 ~~drinking water~~ metals (arsenic through silver) plus antimony, copper, ~~chromium~~, iron, manganese, nickel, zinc and sulfate for the groundwater. The same metals are to be tested for the waste pile ~~except for~~ (sulfate is not). EPA Toxicity metals may be tested for certain wastes. For the sediments, surface run-off, and soils, lead is only to be determined. For any water sample, the specifications for ~~the~~ filtered ^{and/or} unfiltered ~~samples should~~ parameters should be made. ~~This should~~

Field measurements of pH and ~~conductance~~ specific conductance are also to be done for all water matrices. Any other physical or chemical measurements (such as ~~geoph~~ ^{hydrogeophysical} measurements of soil) should also be provided.

Then above listing, acceptable to the Regional Project Manager, Region V and to Illinois EPA ~~should be provided~~ must be provided in the Project Description. The matrices ^{to be} should be tied to the subtasks of Task 3 of the Work Plan. The parameters

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to be tested can be expanded in number based on the results of Task 1 of the Work Plan ("Description of Current Situation"). The present parameters ~~do~~ include the drinking water ^{primary} inorganic chemical contaminants, less sodium, and certain of the priority pollutants and Contract Laboratory Program ~~contaminants~~ "HSL's".

The Project Description Element should address intended use of data. Besides the ~~specific~~ general remedial investigation objectives and public health considerations for groundwater, two specialized considerations should be taken into account ~~for~~ for data usage or study planning:

1. ~~The~~ Background levels of contaminants in the groundwater should be established. This will require a certain sensitivity of analysis for all groundwater wells if we do not know which ~~is the~~ wells are the upgradient or "background wells".
2. EP Toxicity tests are to be performed on waste pile samples. These should not be considered as quality characteristics of contaminants at the site. They should be considered as part of RCRA's definition(s) of hazardous waste for ^{ground} off-site disposal ~~of the~~ pursuant to RCRA regulations. ~~They are~~ EP Toxicity ~~that~~ is not an on-site character of the waste.

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Project Organization and Responsibility

Functional activities for the remedial investigation should be identified besides the organizational ~~charts~~ charts of the QAPP's Attachment 2. ~~For~~ Functional activities are defined ~~in~~ previous guidelines provided the Region V Waste Management Division for preparation of QAPP's. From our Offices viewpoint, functional activities and responsibilities need to be defined for 1) data assessment and 2) Performance and Systems audits. ~~Can offices should be~~

because of the simple matrices unique to the NL site.

III QA Objectives

This section should be rewritten. Objectives need to be established for level of QA ~~and~~, accuracy, precision, ~~completeness~~, completeness, representativeness, and comparability of data. The present section, for examples, specifies data of known quality are to be provided. This can not be done on the basis of 1 in 10 or 1 in 20 sample spikes ~~as~~ described in the generic QA program of C'Brien and Gere, [✓] Reference to the Contract Literature. Program is not appropriate since testing protocols of C'Brien and Gere are not the same as the Contract Laboratory Program. If the determination of background levels are important to the ~~remedial~~ remedial investigation for groundwater, then we ^{possibly} will have to measure what is present. Reference to the 1982 CLP protocols is not appropriate since they were

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markedly changed in 1984 for inorganics and further updated in 1985. ~~Quality~~ The Quality Control Procedures element of the QAPP (see p. 5 of the QAPP) describe protocols from the ~~organic~~ CLP Scope of Work for organics and not the inorganic chemical analyses ~~for this~~ required for this project. The ~~Quality~~ verbiage in the QAPP element for Quality Control Procedures should be stricken.

A. ~~Accuracy~~ QA Objectives for accuracy should be established on the basis of

1. Independently prepared reference materials
2. Matrix spikes
3. Level of effort

It is proposed that for water samples ^(groundwater and surface water) that average matrix spike recovery be between 85% and 115% recovery and not exceed the range of 75%-125%. The matrix spike shall be $\geq 30\%$ of the measured sample concentration. Spike recovery shall be calculated on the basis of spike added. Reference samples ~~shall have~~ analysis

~~For the waters tested~~ results shall have ^{average} errors between 85 and 115% recovery for each method used, and shall be tested ~~within~~ at least monthly for each methodology used. ~~Spk~~ Matrix spike recoveries are to be evaluated in ~~the~~ context of conjunction with reference sample results.

[Handwritten signature]

and shall receive samples

Not meeting accuracy of figures ~~with error~~ should

resulting data is reported as being inaccurate.

~~we cannot can be determined for the dot. The~~

~~CHANDLER BURKHEAD JR~~

~~analyses should be conducted in the EP Court of~~

It is objected that accuracy of observation may be

high output concentration (mature). ~~Other models: I~~

For any undirected graph, the conductance is determined by graph.

1. anagfndne is the anagfndne

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For the EP Toxicity test, no accuracy ~~for~~
~~the test~~ can be determined for the test. There
is no ~~way~~ practical way to establish the "true
value" of a ~~sample~~ solid sample. The test shall
be done in conformance with the details dictated by
Method 1310, SW-846 (2ND edition), unless later
EPA RCRA regulations dictate methodology changes.

For the analysis of EP Extract solutions, accuracy
~~can be established~~ objectives can be established based on
reference samples — 1 Set of 2 Concentrations available from
EML- Cincinnati as QC Samples and matrix
spikes ~~pre~~ added prior to sample extract solution
digestions. Please bear in mind that ~~the test~~ Method 1310
requires method of standard addition calculations
of results. The ~~accuracy or range~~ uncertainty
or confidence levels of the test will ~~be~~ probably
be the most uncertain for lead because of ~~its~~ lead's
solubility markedly changing with small changes in
pH at the extraction pH value of 5. The imprecision
of the entire test will probably dominate or equal
any ~~accuracy~~ inaccuracies in ^{final} lead solution measurements.
The ~~uncertainty~~ uncertainty ~~of EP~~ or range of
EP Extract results can best be estimated by
performing any replicate sample ~~analyses~~ ^{extractions} on
different days.

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For the analysis of total metals in wastes, ~~and~~ soils, and sediments, accuracy objectives can be established. ~~by~~ Firstly, the following determination must be made by project managers.

1. ~~Are~~ Are we interested in the ~~total~~ "true" total metals content of the ~~same~~ solids? This is unnecessary for ambient lead in air since a mandatory reference method exists in lead analyses from Hi-Vol filters. If we are interested in the ~~also~~ "true" total metals analyses for the solid wastes, soils, and sediments, a ~~true~~ ~~days~~ sample digestion procedure should be selected that will dissolve the entire waste or soil.

2. Are we interested in the total metals content as defined by a EPA or ASTM sample digestion procedure such as EPA Method 3050 of SW-846, 2ND edition? ~~For this~~ This ~~will~~ will probably be the case selected.

For accuracy objectives we can establish the following

1. Average spike recoveries of 85-115% for reference sample solutions ~~carried through~~ digestion (liquids) carried through digestions (2 or more determinations).

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2. Sample matrix spikes shall ~~be~~ ^{be} 75 to 125% ~~of~~
2. Average sample matrix spike recoveries shall ~~be~~ be between 80 and 120% Recovery. For ~~For~~ ~~For~~ or more matrix spikes will be done for the wastes (~~Soils~~ Waste and sediment). Ten or more matrix spikes will be done for the ~~soils~~ lead in soils.
3. Matrix spikes shall ~~be~~ ^{be} ~~30~~ ^{> 30%} of measured sample values. It is advisable to use methyl mercuric chloride and an organo arsenic compound as matrix spike compounds for ~~the~~ ^{chlorine}.
3. Two or more independently prepared ~~reference~~ solid reference samples will be ~~used~~ ^{tested} each round of sampling audit the overall methodology recovery. Acceptance limits can not be placed on these sample results if Method 3050 is used, but results can be evaluated for reasonableness.

It is ~~noted~~ that the Work ~~Plan~~ and Sampling Plans require

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1. Precision of Analysis

The best of precision of analysis should be established based on measuring a certain number of field or lab replicates. Precision of analysis should be established as $\pm 15\%$ or $\pm 10\%$ within $\pm 10\pm 20\%$ for each measured or duplicate sample analysis

~~Number of Field Lab~~

~~Matrix Type~~

Matrix Type

Groundwater (each Round)
Surface Water (each Round)
Waste (Slag, SRR, etc)

Soils (Soil only)

EP T quality (Water)

Field	Lab
2	2
1	1
—	4
—	15
—	3
Number of lab Duplicates	

Solid samples lab duplicates should be prepared on different days or as far apart as possible within a sample set.

For EP Extracts, determine ^{desired} sensitivity of analysis, or detection limits, dictated for program needs. For off-site disposal of wastes pursuant to RCRA ~~needs~~ regulations use a detection limit of 10% of action levels. This will allow flame atomic absorption to be used ~~in~~, a cost-effectively - arsenic, selenium, and mercury will ~~for~~ still have to be specialized tests.

For EP Extracts if the exact concentration ~~to~~ values are needed use the methods on the previous page.

~~For soils, ^{sediments} and wastes provide or use~~

For soils, sediments, and wastes using Digestion Method 3050 (2g of dried solid in 100 ml ~~of~~ final digest sample volume) the following methods analyses can be used to achieve suitable detection limits

Graphite Furnace At. Abs. ~~Ba, Cd, Cr, As~~ Sb, As, Se
Cold Vapor (Use Hydride At. Abs. if properly documented method)

Cold Vapor ~~At. Abs.~~ (EPA Method 245.5) Hg

Flame At. Abs. Ba, Cd, Cr, Ag, Cu, Fe, Mn, Ni, Zn
Flame At. Abs. or GFAA → Pb depending on whether a D.L. of 25 or 1 ppm is desired.

C. Blanks

For each set of water samples collected in the field, a reagent blank will be prepared for unfiltered samples. ~~A reagent blank will be prepared.~~ One or more reagent blanks will be prepared by passing reagent water through field filtration apparatus for each set of filtered samples ~~tested~~ prepared. Field reagent blanks (filtered or unfiltered) will be processed with samples. Blank values should be less than desired detection limits or less than 10% of measured sample concentrations (Fe & Zn). It is expected the laboratory will provide laboratory blanks with each set of samples processed for solids and waters.

The frequency of diatomaceous earth ^{blanks} should be specified, ~~along with~~ acceptance criteria for diatomaceous ~~blanks~~ should be provided for review.

D. Completeness, Comparability, and Representativeness

For completeness, It is expected that more than ~~95%~~ (98%?, 95%?) of samples tested shall meet QA Objectives with provision that 100% of groundwaters will meet QA Objectives, ~~For~~ in order to determine background levels.

For comparability, the remedial investigation will have to identify existing unfiltered metals data (from previous data) with filtered metals data for the project.

IV Sampling Plan

(Will comment later)

V Cuckooing

~~The NEIC ~~Procedure~~ Policies and Procedures Manual of 1985~~
The NEIC Policies and Procedures Manual of 1985
should be cited in the QAPP
Cuckooing is in 3 parts, from the NEIC Manual
Federal
Laboratory
Evidence of also

~~I have not reviewed the Sampling Plan for~~
~~the Page 10 of the Sampling Plan does not provide~~
~~a sufficient description to determine if an acceptable~~
~~chain-of-custody is being used~~
Page 9 of Attachment 3 to the QAPP is inadequate
to describe a laboratory chain-of-custody.
~~The QAPP and or Sampling Plan provide~~
~~no provisions for an evidence file as~~
~~mandated by the NEIC Policies ~~Procedures~~ and~~
~~Procedures Manual of 1983 ~~or~~ 1985.~~

VI Analytical Methods

This element of the QAPP should be rewritten. The methods to be used by O'Brien and Gore need to be identified. Do not reference the Contract Laboratory Program since different methodologies are to be used.

~~For~~

It is proposed :

A. Waters

~~Simple Digestion Method 3010~~

Simple digestion unnecessary for filtered waters

Simple digestion ~~to~~ Method 3010 and 3020 used for wastes and soil. There are 3 methods - 1 for flame atomic absorption and antimony, 1 for graphite furnace, and 1 for silver. Method 245.5 should be used for mercury.

~~Test~~ Flame atomic absorption is used for ~~Ba~~ Ba, ~~substance~~, iron, manganese, and zinc.

Graphite furnace is used for arsenic, cadmium, chromium, lead, selenium, silver, antimony, copper, and nickel; Darcus hydride atomic absorption be allowed for antimony, arsenic, or selenium if proper detection limits are used and a proper detailed test procedure description exists.

Cold vapor atomic absorption is used for mercury. Flame atomic absorption can be, and should be, used for metal concentrations large in magnitude.

Method descriptions should be available to specify for each atomic absorption methodology: (1) the wavelength of measurement, (2) the flame used, (3) concentration of standards used to calibrate the instrument, (4) usable working concentration range of each method, (5) volume of standards used for graphite furnace ~~work~~ determinations, (6) temperature programme and temperatures used for the graphite furnace, (7) the method of standard addition protocols used for graphite furnace work, and (8) the use of any background correction, and the use of any matrix modification ~~requirements~~.

Acceptable ~~graphite furnace~~ method of standard addition protocols are necessary for all graphite furnace determinations.

The Section 5 ~~of~~ Methods and Procedures - ~~needs to be rewritten of the~~ Attachment 3 to the QAPP needs to be rewritten. Separate digestion procedures are required for water and ~~water~~ solids. The methods should be redefined. ~~Detection limits for~~ to reflect what the laboratory is actually doing. Gaseous, hybrid methods are suitable replacements for graphite furnace determinations of antimony, arsenic, and selenium, so long as the hybrid methods are properly documented.

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The digestion procedure specified in p. 14 of Attachment 3 to the ATP is ~~inapplicable~~ correct to be re-evaluated in light of the above elements. Soil sample digestions ~~are~~ done utilizing acid does not seem adequate for lead. Method 3050 should be used for lead.

Methods for metals in soil

Atomic absorption methods of measurement for digestion of acids can use flame methods except for ~~As, Sb, As, Hg, Se~~ and possibly lead. If 2.5 ppm is too low a detection limit for lead (leadments?) use graphite furnace determinations.

VII Internal QC

After ~~select~~ selection of QA Objectives and analytical methods, specify ~~and~~ QA audits and their acceptance criteria for

- ① Laboratory blanks
- ② matrix spikes (specify any specialized compounds)
- ③ duplicate sample analyses
- ④ ~~select~~ instrument calibration checks
- ⑤ reference samples or control solutions
- ⑥ documentation of operational details of the EP Topic by Test.

VIII Performance and Systems Audits

Performance Audits will be provided by the Quality Assurance Office, Region V. Systems Audits will be done at the discretion of Region V, EPA.